BACHELOR OF SCIENCE IN CIVIL ENGINEERING - QUANTITATIVE REASONING CATEGORY I/II AND ENG 114

127 Total Units Required
Minimum Number of Units in Major: 93

Course Title Units

First Semester
ENG 114 Writing the First Year: Finding Your Voice (A2) 3
ENGR 100 Introduction to Engineering (Major Core) 1
ENGR 101 Engineering Graphics (Major Core) 1
MATH 226 Calculus I (Major Core, B4) 2
GE Area A: Oral Communication (A1)3,4 3
GE Area B: Life Science (B2) 3

Units 15

Second Semester
Select One (Major Core): 3-5
CHEM 115 General Chemistry I: Essential Concepts of Chemistry
CHEM 180 Chemistry for the Energy and the Environment (B1, B3, ES)
ENGR 271 Introduction to MATLAB (Major Core) 1
MATH 227 Calculus II (Major Core) 4
PHYS 220 & PHYS 222 General Physics with Calculus I and General Physics with Calculus I Laboratory (Major Core, B1, B3) 4

GE Area E 3

Units 15-17

Third Semester
ENGR 102 Statics (Major Core) 3
ENGR 200 Materials of Engineering (Major Core) 3
MATH 228 Calculus III (Major Core) 4
PHYS 230 & PHYS 232 General Physics with Calculus II and General Physics with Calculus II Laboratory (Major Core) 4

GE Area C 3

Units 17

Fourth Semester
ENGR 201 Dynamics (Major Core) 4
ENGR 205 Electric Circuits (Major Core) 4
ENGR 235 Surveying (Major Core) 3
MATH 245 Elementary Differential Equations and Linear Algebra (Major Core) 3

PHYS 240 & PHYS 242 General Physics with Calculus III and General Physics with Calculus III Laboratory (Major Core) 4

Units 16

Fifth Semester
ENGR 300 Engineering Experimentation (Major Core) 5
ENGR 304 Mechanics of Fluids (Major Core) 3
ENGR 309 Mechanics of Solids (Major Core) 3
ENGR 434 Principles of Environmental Engineering (Major Core) 3

GE Area C 3
GE Area D 3

Units 18

Sixth Semester
ENGR 302 Experimental Analysis (Major Core) 5
ENGR 323 Structural Analysis (Major Core) 3
ENGR 429 Construction Management (Major Core) 3
ENGR 430 Soil Mechanics (Major Core) 3
ENGR 436 Transportation Engineering (Major Core) 3

GE Area C 3

Units 16
## Seventh Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 425</td>
<td>Reinforced Concrete Structures (Major Core)</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 696</td>
<td>Engineering Design Project I (Major Core)</td>
<td>1</td>
</tr>
<tr>
<td>Major Upper-Division Electives – Take Two</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>GE Area D - Take Two</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

**Total Units**: 16

## Eighth Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 697GW</td>
<td>Engineering Design Project II - GWAR (Major Core)</td>
<td>2</td>
</tr>
<tr>
<td>Major Upper-Division Electives - Take Two</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Total Units**: 14

**Total Units**: 127-129

---

1. ENG 114 can only be taken if you complete Directed Self-Placement (DSP) and select ENG 114; if you choose ENG 104/ENG 105 through DSP you will satisfy A2 upon successful completion of 105 in the second semester; multilingual students may be advised into alternative English courses.

2. Depending on courses completed through Early Start, students in Pathway/Category III or IV may be required to enroll in a support course to complement their Quantitative Reasoning/B4 requirement. There are multiple course options for this pathway. Before enrolling in a B4 course, students should verify their MATH Pathway/Category in their Student Center (http://cms.sfsu.edu/content/student-center). Information regarding the courses that correspond with your MATH Pathway/Category can be found on the Developmental Studies Office Website (http://developmentalstudies.sfsu.edu).

3. To avoid taking additional units, it is recommended that you meet SF State Studies requirements (AERM, GP, ES, SJ) within your GE.

4. GE Area A: Critical Thinking (A3) is satisfied upon completion of ENGR 205 and ENGR 201 or ENGR 213.

5. GE Area UD-B: Upper-Division Physical and/or Life Sciences is satisfied upon completion of ENGR 300 and either ENGR 301 or ENGR 302.

6. You must complete 21 units of upper-division Engineering units before registering for ENGR 696.

### Major Electives (12 units)

- ENGR 303 Engineering Thermodynamics (3 units) (Prerequisite for ENGR 469)
- ENGR 426 Steel Structures (3 units)
- ENGR 427 Wood Structures (3 units)
- ENGR 431 Foundation Engineering (3 units)
- ENGR 432 Finite Element Methods in Structural and Continuum Mechanics (3 units)
- ENGR 435 Environmental Engineering Design (3 units)
- ENGR 439 Construction Engineering (3 units)
- ENGR 441 Fundamentals of Composite Materials (3 units)
- ENGR 461 Mechanical and Structural Vibrations (3 units)
- ENGR 468 Applied Fluid Mechanics and Hydraulics (3 units)
- ENGR 469 Alternative and Renewable Energy Systems (3 units)
- ENGR 610 Engineering Cost Analysis (3 units)
- ENGR 699 Independent Study (1-3 units)
- ENGR 826 Seismic Hazard Analysis (3 units)
- ENGR 827 Structural Design for Fire Safety (3 units)
- ENGR 829 Advanced Topics in Structural Engineering (3 units)
- ENGR 831 Advanced Concrete Structures (3 units)
- ENGR 832 Advanced Topics in Seismic Design (3 units)
- ENGR 833 Principles of Earthquake Engineering (3 units)
- ENGR 835 Advanced Steel Structures (3 units)
- ENGR 836 Structural Design for Earthquakes (3 units)
- ENGR 837 Geotechnical Earthquake Engineering (3 units)